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ON THE PRODUCTION

OF

Positive Proofs

FROM

WAXED PAPER, COLLODION,

AND OTHER NEGATIVES.

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ON THE PRODUCTION OF POSITIVE PROOFS FROM
WAXED PAPER, COLLODION, AND OTHER NEGATIVES.

Read before the Chemical Discussion Society, Jan. 11th, 1855.

1. WHEN I had the honour to read before this society, some months ago, a paper on the production of waxed paper negatives, I promised to place before you at some early period one on the production of photographic positives. The difficulty I found in giving sufficient attention to the former ought, perhaps, to have made me prudently abstain from making positive promises in regard to the latter.

2. But, "Hope springs eternal in the human breast," and so, forsooth, I *hoped* that after a short period I might have prepared a paper upon this subject. The necessarily lengthiness of this subject, compared with the former, has called for more time and closer attention than my occupation through the day has permitted me readily to bestow, and this, I feel confident, you will consider sufficient apology for my delay.

3. My former paper has been favoured with an encouragement which I was very far from anticipating; and I have had many very flattering testimonies of the good results obtained by the treatment I recommended. It is, therefore, with considerable confidence, and not a little pleasure, that I submit to you methods for the further progress and completion of pictures, and I trust you will find them successful.

4. My chief object is to stimulate those who may have been discouraged in their former attempts. I have often felt discouragement, but now believe that, as the different processes in photography are brought down to such simple manipulation, any one with a little perseverance will succeed satisfactorily. I think photography a very fascinating study, especially when crowned with success, and I trust you will, upon trial, meet with that gratification which arises from the successful practice of this art.

5. Before commencing my task, allow me to remind my hearers that I simply intend to point out those methods which I have invariably found *myself* to be most successful. It would be easy to swell my intended short paper into a volume if I were to give one half, or one tenth, of the processes tried and recommended by different persons, with their relative merits or demerits, and the reasons for rejecting some and retaining others. But my object is to *lessen*, not *increase*, the difficulties which all will meet with in their first attempts, and I think you will agree with me in rejecting, *en masse*, all I have found *not the most successful*.

6. Before entering upon the method of printing in the pressure frame, I will give the formulas for preparing the paper, such as salting, albumenising, exciting, &c., &c., and rather than recapitulate those processes mentioned in most books published upon the subject, I shall simply give those I have been in the habit of working with, and with which I have obtained such very rich tones of colour, quite to my own satisfaction, and also to many of my photographic friends to whom I have had the pleasure of exhibiting my results.

7. Previous to the preparation of the paper attention should be given to the right side, or face. I have found that much better pictures are always procured on the face of the paper than on the opposite side (I regret that I omitted to mention this when describing the waxing process). I usually mark the right side, or face, with a cross, or letter, or some such character, which is easily distinguishable while in the solution; a little practice will enable one soon to discover which is the face of the paper, but at first it is not so easy.

8. The best way is to lay the whole packet of paper upon a table close to a window, and standing at a little distance from it you will discover upon the surface, and upon one surface only, some parallel waves or lines, about one inch broad, alternately dark and light. If not seen at once, turn the sheet over and over, and the difference in appearance is readily observed; the side on which these waves or lines are is the back of the paper, and is rough or spongy, while the face is perfectly smooth; each sheet should be marked on the face at the four corners, to prevent the possibility of losing the right side after cutting, and so save the trouble of making a second search.

SELECTION OF PAPER.

9. The most suitable paper for albumenising is that made by Canson Freres, a French paper; both the negative and positive papers may be used, but I think, although called negative, the former is the best, as it has a much finer surface and much more even texture, and, being thin, looks better when mounted and finished.

10. The Saxony paper answers equally well, and is by many preferred.

TO PREPARE THE ALBUMENISING SOLUTION.

11. Take of the whites of new laid eggs and of distilled water each in equal proportions, and add to every ounce of the mixed liquid six grains of pure chloride of sodium, that is:—

One ounce whites of eggs.
One ounce distilled water.
Twelve grains of chloride of sodium.

12. Beat this completely to a froth in a deep-shaped basin, until none of the fluid remains.

13. The best instrument for this purpose is a wisp consisting of about a dozen large-sized quills stripped of all the feathers, and tied tightly round a circular piece of wood, leaving the small ends of the quills projecting beyond the stick about four inches (fig. 1). By immersing these

Fig. 1.



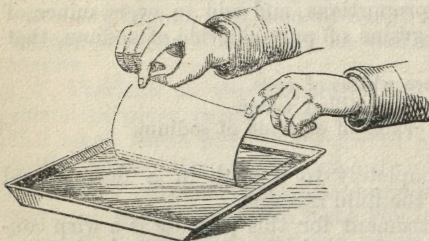
ends in the liquid, and placing the upper part of the stick between the palms of the hands, and thereby giving it a circular motion, or trundling, at the same time moving it backward and forward over the area of the dish or basin, it will be found that the whole of the liquid may soon be beaten to a froth; as soon as this is accomplished it should be allowed to stand for twelve hours, and then strained through a piece of linen. This is the albumenising liquid, which is now ready for use. Many other chlorides are sometimes employed, such as the chloride of ammonium, barium, &c., &c., but the simplest I believe to be the best, that of sodium (which is re-crystallised table salt*), at least I have with this invariably found the best results.

TO COAT THE PAPER WITH ALBUMEN.

14. The albumenising solution should be placed in a flat porcelain dish, of the required size, and sufficiently deep to contain enough of the solution; to provide against any inequalities in the surface of the dish, care should be taken that no air-bubbles be upon the surface of the solution, and if any, a strip of bibulous paper should be gently drawn over it which will remove them.

15. A sheet of the marked paper should now be taken up

Fig. 2.



by two corners, and gently placed from the opposite end upon the solution (Fig. 2), using a sufficient amount of pressure to exclude all air-bubbles; this sheet being laid with its marked side upon the sur-

face of the solution and a second sheet laid in the same

* Ordinary table salt contains a large quantity of iron, and is not, therefore, fitted for this purpose.

manner in another dish, and when a considerable quantity of this paper is required, I generally use five or six dishes at once; by so doing much time is saved, for as soon as the last dish is supplied the first sheet is ready to be taken out.

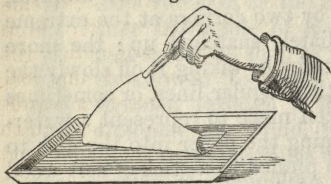
16. After laying on the solution from five to ten minutes, the sheet should be taken up by two corners at the extreme end of the paper and immediately snatched up; the more quickly this is done the better, for by taking it off slowly the paper will become marked with irregular lines, or sometimes as though an attempt had been made to represent a waterfall in a landscape; after draining the paper into the dish to save the solution, it should be pinned to a stick of soft wood by its two corners and suspended by a couple of lines, or, what answers equally well, pinned to the rails of a clothes' horse; it should then be placed near a good fire and dried off quickly, or it will become spotted. As soon as sufficiently dried, each sheet should be taken down and covered over to keep it free from dust; after the whole of the paper has been treated in this way, one of these sheets should be placed with its face downwards upon a packet of about half a quire or more of white bibulous paper and one sheet of the latter put on it. A tolerably hot iron should then be passed slowly over the whole surface. It should then be re-placed by another, and so on sheet after sheet until the whole is finished. The paper is now ready for exciting, or being made sensitive, and should be kept perfectly flat in a portfolio, and in a dry place, as damp will probably spoil it; this paper thus prepared may be preserved for any length of time, and is rather improved by being kept than otherwise. Thus far the process may be performed by day-light, the paper not being at all sensitive to light.

EXCITING THE ALBUMENISED PAPER.

17. Take of the nitrate of silver (lunar caustic, that which is sold in sticks and used in surgery I prefer and not the crystals), and dissolve in distilled water in the proportion of fifty grains of the former to one ounce by measure of the latter, and when dissolved place in a glass or porcelain dish (kept expressly for the purpose) enough of the

solution to cover the bottom. After removing any air-bubbles which may be found upon its surface, lay (beginning very carefully at one end) one of the sheets with its albumenised surface upon the solution; allow it to remain

Fig. 3.



for about half a minute and then gently lift it up by one of its corners (Fig. 3); should any air-bubbles be present remove them with the horn forceps — which should always be used in preference to the fingers, which are liable to

become stained by the liquid, besides that each touch of the latter will probably soil the paper, and so endanger ultimate success in the proof; after quickly lowering the sheet again upon the solution, allow it to float for two minutes longer, then lift it up by its two corners, and after draining the superfluous solution into the dish, hang up by one corner only to dry.

18. A small piece of bibulous paper should be attached to the lower corner to facilitate the drying. If the weather is cold it is better to dry by the fire. This part of the process should be carried on in a dark room, either by the light of a candle, or by the use of a yellow blind at the window to exclude all day-light. Care should be taken that the paper be perfectly dry before using in the pressure frame, for if at all damp when brought into contact with the negative, which is the next operation, the latter will certainly be spoiled. I am particular to mention this, as we are very apt, in the eagerness to see the fruit of our labour, to be too precipitate just at the point when indeed precipitation is most fatal, and hope unrealized is most disheartening. I have often suffered from this cause, and wish to warn others of the danger.

SALTING PLAIN PAPER.

19. Take of chloride of sodium and distilled water, and mix in the proportion of six grains of the former to one ounce of the latter; when dissolved, place in a deep dish a

considerable quantity, at least from twenty to forty ounces, according to the size of the dish and the number of sheets to be salted, but plenty should at all times be used, as the paper is not so evenly salted with a small quantity. Now plunge a sheet of the marked paper (either the Saxony positive or Canson's positive) into this solution, and again sheet after sheet, one upon the other, until six or eight are immersed, then turn the whole over and commence with that which was at the bottom; take them all out one after the other and hang up to dry. By immersing this number at once, just time enough is allowed them to remain in the solution, and is sufficiently long to saturate the paper without disturbing the fibre of its surface.

20. Another parcel of paper may be prepared in the same way, and so on till the required number is salted. The remaining liquid may be filtered into a stoppered bottle, and preserved for further operation when wanted; it will keep perfectly good for any length of time. The paper when quite dry may be taken down, and kept free from damp till required for use, great care should be taken not to handle it more than is absolutely necessary, to prevent stains from the moisture of the skin. Paper thus treated does not require ironing (as does the albumenised paper, before described), and may be prepared by day-light, not being at all sensitive to light.

EXCITING THE SALTED PAPER WITH PLAIN NITRATE OF SILVER.

21. Take of the crystallised nitrate of silver (not the lunar caustic as recommended for the albumenised paper) and mix with fresh distilled water, in the proportion of fifty grains of the former to one ounce of the latter, and when it is all dissolved, pour it into a flat porcelain or glass dish kept for this purpose, only sufficient to cover the bottom, then float upon this solution a piece of the above salted paper, with its marked side in contact with the liquid; then lift up, to examine if there are any air-bubbles, if any, remove them, and immediately return the paper, and allow it to remain floating for three minutes, then hang up by the corners to dry, at some little distance from the fire, taking the precautions before alluded to of attaching a

piece of bibulous paper to the lower corner ; as soon as perfectly dry it is ready for the pressure frame. Each of these papers, both the plain salted and the albumenised, may, if preferred, be excited on the night previous to its being used, but if equally convenient it is advisable to prepare them on the same day, as the sooner they are used after preparation the better, for if kept very long the whites become less pure than when the fresh paper is used.

These two papers above described are the best suited for general views.

AMMONIO-NITRATE, OR QUICK PRINTING PAPER.

22. Take of the crystallised nitrate of silver and mix with fresh distilled water in the proportion of fifty grains of the former to an ounce of the latter, and when all the crystals are dissolved, add strong liquid ammonia to the solution, a few drops at a time, a brown precipitate will be formed immediately upon the addition of the ammonia ; constantly shake the bottle containing the liquid, or stir well with a glass rod. By continuing the addition of the ammonia, the liquid will again become perfectly clear and bright ; care should be taken that no more of the ammonia be added than is absolutely necessary to re-dissolve the precipitate, or the picture printed upon the paper prepared with it will be of an unpleasant reddish brown ; should, however, any excess of ammonia have been added, it may be neutralised by dropping into the solution a small crystal or two of the nitrate of silver, which will create at first a slight turbidness in the mixture, but after standing a short time this will quite disappear and the solution assume its proper clearness.

23. This is the ammonio-nitrate of silver.

24. Place some of this solution of ammonio-nitrate of silver in the dish which is kept for the purpose, and float the salted paper upon it for three minutes, using the same precaution to avoid air-bubbles before alluded to ; and after remaining upon the solution the time mentioned, take it off, commencing at the end, and hang up to dry by the fire, which should be done quickly and in a dark room. When dry it is ready for printing upon in the pressure frame.

25. It may be as well perhaps here to mention, to avoid if possible disappointment, that this ammonio-nitrate of

silver solution is suited only for the plain salted papers, and not those prepared with albumen.

PRINTING PAPER SPECIALLY SUITED FOR PORTRAITS.

26. First make a solution in the proportion of eight ounces fresh distilled water, eight grains chloride gold, two grains iodide potassium, twelve grains chloride sodium ; whatever be the quantity required, these are the proportions to be used ; that is to say,

Distilled water, eight ounces.
Crystallised chloride gold, eight grains.
Iodide potassium, two grains.
Chloride sodium, twelve grains.

27. After dissolving the above, the solution should be filtered, and after filtration place some of it in a porcelain or glass dish, as before described ; great care should be taken that this dish be kept for this purpose and for this purpose only, for should one be used which has at any time had hyposulphite of soda in it, it will be fatal to success, however clean it may have been washed. On this solution lay a piece of either Canson's positive, Saxony positive, Turner's, Whatman's, or Twogood's paper, with its marked side upon the surface, and allow it to float in contact with the solution for five minutes, then hang up by one corner to dry before the fire, attaching a piece of bibulous paper to the lower corner as before described, which should be done at all times, or a marbling at the lower end will be the consequence ; when quite dry it is ready for the second operation, that of rendering the paper sensitive. This paper will not keep good for more than six or eight hours.

28. As most of the papers above-mentioned give different tones, experiments should be made with each before the manipulator decides upon which he will use ; of course much difference of taste exists, and each must choose for himself which he will employ.

TO RENDER THE ABOVE PAPER SENSITIVE.

29. Take a piece of paper salted as above and float upon a solution of ammonio-nitrate of silver, made as described in page 12, for three minutes, then again hang up to dry

before the fire; when dry it is ready for the pressure frame, and should be at once used. It is advisable to perform both of these operations in a dark room, as even the paper prepared by the solution containing gold is slightly acted on by light, and of course after the ammonio-nitrate silver it is highly sensitive.

After using the solutions of nitrate of silver for exciting the paper, each of them should be filtered through animal charcoal, by placing a little in the bottom of a filter, which will prevent the discolouring of the solution, and the solution may be used over and over again.

PRINTING IN THE PRESSURE FRAME.

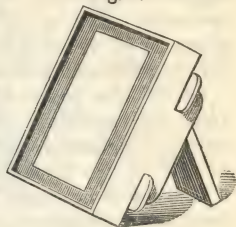
30. Whether for printing views or portraits, either from glass or paper negatives, the frames used should be those which have the back board hinged in the centre; these allow the operator to examine the progress of the print during the time of exposure. Having well cleaned the plate glass of the frame, lay it with its face downwards upon a table, take out the jointed back board, and place the negative upon the centre of the glass plate; if a collodion negative, the side which has the collodion upon it should be put with its face uppermost, so that the plain glass which has nothing upon it may be in contact with the glass of the pressure frame.

31. If a paper negative, it should be laid with its marked side or that which has received the impression uppermost; now take a piece of the sensitive printing paper, and having cut it down to a size leaving about half an inch margin beyond the size of the negative, for the purpose of roughly judging the progress of the positive print (the strips thus cut off the prepared paper, however small, should be taken care of, they being required for another part of the process hereafter described), then lay it down with its prepared side upon the negative, then cover the whole on the back with two or three sheets of bibulous paper (quite new), re-place the back board and screw down tightly; this is now ready for exposure to the light, and if convenient out of doors, for if exposed in a room a much longer time of exposure is necessary.

32. If the paper be used as described for portraits, diffused day-light will be found preferable to sun-light; but for paper negatives sun-light is absolutely necessary, or the time required to obtain the impression would be, of course, too long.

33. In exposing the pressure frame to the sun it should be placed at such an angle that the rays fall directly upon the centre of the frame; so that no shadows be thrown over its surface. (Fig. 4.)

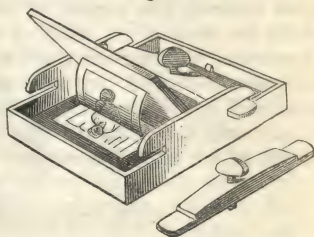
Fig. 4.



TIME OF EXPOSURE IN THE PRINTING FRAME.

34. By means of the jointed back in the frame, and by removing only one of the crossbars at the back, one half of it may be opened, and the end of the positive may be lifted up, to ascertain the progress made upon it by the action of the light, and if not sufficiently printed may be returned without disturbing its position, and again exposed for deeper printing if necessary. (Fig. 5.) It will be as well to give here some few general rules as to the time necessary to obtain the intensity of colour in the finished picture, in order to guide those who have not had the benefit of experience.

Fig. 5.



35. If the albumenised paper, as above described, be used either to copy from glass or paper negatives, whether portraits or views, the positive proof should be what is generally termed "over-printed," that is to say, the fine lines in the picture should appear as though they were quite gone, the deeply impressed parts, such as the foliage of trees, buildings, &c., &c., should appear to have become quite metallised, and of a silvery gray colour; as soon as the print has this appearance it may be taken from the pressure frame and re-placed by another sheet of sensitive paper, and

again exposed to sun-light as before ; and so on, sheet after sheet, till the required number are printed, either from one negative or from others, according to the will of the operator. This proof, then, should be set aside in a dark place, to be treated in the toning or colouring bath, which will be afterwards described.

36. If the paper described as ammonio-nitrate paper be used, the printing should also be carried on till it has become blackened, and a tinge of grey brown appears, which will follow the blackening.

37. At this stage of exposure the progress should be stayed, the picture taken out, and re-placed by another sheet of the sensitive paper. This also is to be set aside to obtain the required tint upon it, produced by immersion in the toning or colouring bath.

38. The same directions are applicable to using the paper described as plain nitrate paper.

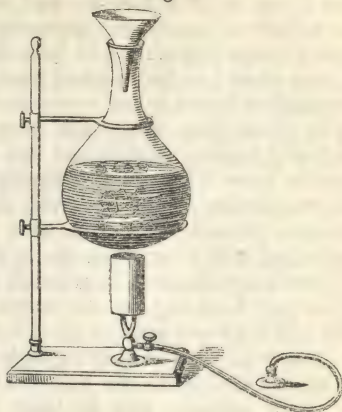
39. If the paper described as portrait paper be used, the printing should be also carried on very deeply until it has a silvery grey appearance, in fact, each kind of paper requires to be so over-printed as to seem quite obliterated and spoiled, the reason of this apparent obliteration will soon be obvious on making a few trials. It may perhaps be as well to mention that, as a general rule, the negatives on paper will need about three times the length of exposure required by those upon glass, and even both these vary very much according to the general density and their half tones, which experience alone can determine.

THE HYPO-COLOURING BATH.

40. Take hyposulphite of soda and mix with ordinary water in the proportion of one ounce of the salt to eight ounces of water, when dissolved put the solution into a glass flask, and add a good quantity of the waste strips of excited albumenised paper, which should have been previously exposed for several hours or even days to sun-light (the longer the better) ; boil all these together (if you have not a good quantity it is better to use a few sheets blackened on purpose) for about half an hour or an hour, in order to

dissolve out the chloride of silver existing upon the surface. A glass funnel should be placed in the neck of the flask during the ebullition to condense the steam given off, or the resulting liquid will be too strong as the evaporation of the water would of course alter the proportion of the ingredients in the solution. (Fig. 6.) After boiling the above over a gas or spirit lamp, set aside to cool, then strain off the liquid and add

Fig. 6.



chloride of gold in the proportion of one grain to the ounce; that is to say, if you have twenty measured ounces of the liquid, add to it twenty grains of the chloride of gold, and so on in this proportion.

41. The paper left in the flask after boiling may have more solution of hyposulphite of soda added to it in the same proportion to make another bath if thought necessary. This is the toning or colouring bath, which may be used for any length of time, and is not at all impaired by age, but on the contrary is rather improved by using. It will, however, require occasionally a little addition of a few grains of the chloride of gold, but in less proportion than with the new bath, say about half a grain to the ounce, or the blackening qualities will be reduced.

42. It will be found advisable to mix the chloride of gold with a little water before adding it to the bath, and during the time of mixing stir briskly with a glass rod; this chloride of gold being a very deliquescent salt may therefore be dissolved in a very small quantity of water, which will not materially reduce the general strength of the bath thus made.

43. After pouring this solution into a flat dish to the depth of about one or two inches (the more the better),

plunge in the positive prints, one over the other, no matter how many, so that they be well and equally covered, and allow them to remain for from six to eight hours; if a new bath perhaps less time will be sufficient, and if an old one, or one that has had a great many proofs through it, even twenty-four hours is not too much to get the very rich tones. Upon their first immersion they will turn red but will gradually become darker, and the obliterated parts will by degrees show themselves beautifully defined, and quite to the satisfaction of the operator, that is, if he has done his business properly, or even with ordinary care from the beginning, and if he is not one of those unhappy individuals who are not willing to be satisfied with anything they themselves may do or any one else may do for them. I hope none such will try their hand in the practice of photography. In working with this colouring bath it will soon be seen that the longer the proofs are left soaking in it the darker tone they will assume, and if they be not over-printed, as above recommended, before these dark rich tones are obtained, the half tones will suffer, and the entire picture will have a cold disagreeable appearance, which might justify the dissatisfaction of a friend suffering from the just named unenviable disposition. As soon as the required tint is obtained in this toning or colouring bath, it should be taken out, and after draining (to save the solution) should be plunged into a solution of plain hyposulphite of soda, fresh made each time, mixed in the proportion of one ounce of the salt to ten ounces of water, and should be allowed to remain here from ten to twenty minutes, which will brighten up the whole picture very materially. This after bath is thought by many not at all necessary; but I consider it absolutely essential, not only because of the enlivening effect it has in the final character of the proof, but because also it secures the general fixing; for the fixing properties of this colouring bath must of necessity become considerably impaired by the additions made of the acid salts and the constantly adding fresh proofs. It is to the want of caution in this respect that I attribute the fading of proofs after two or three years' exposure to the air, so frequently complained of. The extra soaking in the plain hyposulphite soda solution completely secures this, and certainly should

not be grudged, considering how trifling the expense and trouble. After the pictures have remained ten or twenty minutes in this final fixing bath, they should be taken out and soaked in plenty of plain water, and as soon as all are immersed, they should, while in the water, be rubbed over with the finger, or with a brush (of the description used by painters, and known under the name of sash tools), to remove any dirt which may have been deposited upon the surface while in the different solutions.

44. After soaking these pictures in plain water for five or six hours, during which time it should be frequently changed for fresh, a very effectual method of washing the proofs is to place them in a deep vessel, either of wood or earthenware, slightly tilted, in a sink, or, better still, to have a small hole drilled in the bottom of the vessel, then, by fixing a piece of vulcanised India-rubber or gutta-percha tubing to the tap of a cistern of water, allow a constant stream of water to run into the dish containing the proofs, enough to keep the dish full as it is drawn off by the hole at the bottom. It will be found that as fast as the hyposulphite of soda is dissolved out it will, by its greater specific gravity than the plain water, find its way to the bottom and escape; if this method can be conveniently adopted it will prove to be the most effectual way of getting rid of the salt used in fixing. I would here caution the amateur in photography that unless the soda be thoroughly dissolved from the pores of the paper, as well as from the surface, the pictures will certainly be spoiled in time by fading; and, on the contrary, if proper attention be paid to the cleansing as well as the fixing, in the way I have described, he may hope to see his pictures resist the most persevering attacks of time, quite as successfully as he himself could wish; after thus washing they may be taken out and hung up to dry by the two corners, or, if more convenient, placed between sheets of new blotting paper till nearly dry, and then hung up to finish; when the whole is perfectly dry each proof should be placed between sheets of blotting paper and smoothed out with a tolerably hot iron. Proofs thus far are finished, there only remains the mounting.

45. The above colouring and after fixing baths are suited for the albumenised, the plain nitrate, or the ammonio-

nitrate papers, but not that which I have termed portrait paper; I must for this describe another bath.

HYPO-COLOURING BATH FOR THE PORTRAIT PAPER.

46. Take hyposulphite soda one ounce, and dissolve in sixteen ounces of distilled water (being only one half the strength of that recommended previously); when dissolved, add four grains iodide potassium, and half an ounce of a 50-grain solution nitrate silver; that is,

Hyposulphite soda, one ounce.

Water, sixteen ounces.

Iodide potassium, four grains.

50-grain solution nitrate silver, half an ounce.

47. When both the salts are dissolved, stir the whole well together (or during the dissolution), and then, without filtering, place the solution in a flat porcelain dish (either of the dishes used for hyposulphite solution will answer), and plunge into it the over-printed copies, as described in page 15, allow them to remain there for about twenty minutes, or half an hour, then take them out and drain for one or two minutes; and, lastly, immerse in a solution of plain hyposulphite, one ounce of hyposulphite of soda to ten ounces of water, for five or ten minutes, according to the nature of the print, for if not well printed they will begin to lose their richness when left too long in this clearing bath. This being done they have only to be well washed and soaked in plenty of water, which, during the soaking, should be frequently changed as before mentioned; after this they may be taken out and either hung up or put between blotting paper to dry (if preferred, they may be washed in hot water).

48. When perfectly dry, the proofs should be placed separately between blotting-paper, and a tolerably hot iron passed over them, or the iron may be passed over the back of the picture, while its face is on several sheets of bibulous paper, in the same way as described for the albumenized paper pictures. They are then ready for mounting. The proofs taken by the last described process are admirably adapted to receive the colouring or tinting of the artist.

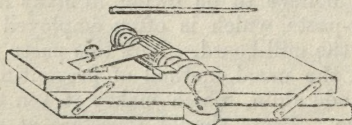
METHOD OF MOUNTING PHOTOGRAPHS.

49. The beauty of photographs, when seen in a collection, either on the walls or in a portfolio, is greatly increased by the taste displayed in the arrangement of their subjects, and in the regularity of their dimensions, &c. As most amateurs work with one camera and one only, it is well to preserve a uniformity in the size of the pictures. A very good way of securing this is to have a piece of glass cut of a size exactly suiting that of the pictures printed, and its sharp edges ground. Then lay the print with its rough margin just as it leaves the pressure frame upon its back on a glass case, or glass slab (or even the glass of the pressure frame answers perfectly well, should none better suited be at hand), and then lay this piece of cut-glass down upon the face of the proof, and after properly adjusting the squareness of its position, &c., &c., press the left hand tightly upon the centre of the glass in order to secure it from moving. By running a sharp penknife round the whole, the margin will be cut off perfectly smooth, without leaving any ragged edges, and with as clean a cut as though it had been done in a printer's press. The knife used should be perfectly sharp, and a very little pressure is required to make the cut, which will neither injure the knife nor scratch the glass tablet upon which it is made.

50. After the ragged edges or margin are cut off, the next thing to be considered is the mounting; and I am afraid many photographers will be disappointed in a year or two at finding the proof fade, or be disfigured by patches of yellow colour, which I believe to be owing, in many instances, to the use of flour-paste, which is often employed in sticking the proof upon the mill-board. Now this paste very readily turns acid, and the usual method of preventing this acid re-action is to add alum, which makes it ten times worse for this purpose. Paste should therefore at all times be avoided. A very good substitute for it is a weak solution of fine glue, made by boiling the best transparent Salisbury glue in water in such a proportion as will leave it when dissolved very thin, for if thick it will mark the proofs when pressed. It should always be used when hot. Rough

isinglass dissolved in water as follows answers the purpose very well: boil in the proportion of one ounce isinglass to twelve ounces or fourteen ounces of water, this should be boiled for from ten to fifteen minutes, until the whole (or nearly all) is dissolved, then strain through a piece of fine linen, and the liquid is ready for use; this too should be used while warm. Whichever of these solutions be employed, the print should be laid with its face upon a piece of clean paper, and then the whole of its back brushed over with the above solutions as thinly as possible, so that no excess may afterwards be pressed out; then take the pasted proof up by the two extreme ends, and lay it gently down upon a piece of card-board (called Bristol boards) of such a size as will leave a good margin all round, and lightly smooth it over with a clean cloth. After mounting the whole of the proofs required in this way, they should be placed one over another in a press, such as is used for copying letters, then screwed down as tightly as possible; they should be left there for several hours. As this press is very heavy, and not generally found in private houses, I would here mention that, for the convenience of amateurs, a very suitable press has been contrived by Mr. Knight, which answers all the purposes of the above heavy one. It is so portable that it may be carried with the general apparatus used by photographers. It presses the paper perfectly, and is provided with a lock and key; it not only answers for the pressing photographs when finished, but also keeping air-tight the sensitive paper when prepared for negatives. (Fig. 7.)

Fig. 7.



51. The two solutions above mentioned are found to be the best suited for mounting pictures upon boards for frames, &c., when it is best to stick the whole of the surface; but where that is not necessary, and the edges only pasted down, a very clean and convenient way is to

use a solution of India-rubber, made by dissolving sheet India-rubber in coal-tar, naptha. This solution may be kept in a stoppered bottle, ready for use, for any length of time. It should be laid on with a camel's hair brush as thinly as possible, and the proof at once placed upon its mount. It will be found admirably suited for attaching to the leaves of portfolios, and has this advantage, that should any of the solution be squeezed out beyond the edge of the picture, which sometimes happens, it may be peeled off without either injuring the proof or the leaf of the portfolio on which it is cemented.

The task I have taken upon myself is ended. My hearers will observe that I have embellished nothing, have used as few technical expressions as possible, which are difficult to be understood by those unacquainted with chemical photography. I have been as brief as possible, consistent with clearness, and as clear as I could conveniently be without being tediously full in details. I have little doubt that if the instructions here laid down are followed, results most satisfactory will be obtained, and I may again have the pleasure to receive the thanks of my photographic friends, for having helped them out of the difficulties which their want of opportunities to practise sufficiently had left them in. I sincerely trust that the time I have spent this evening has not been lost on *any* of my hearers. If not, and some of you are stimulated to commence operations in this delightful art, while others are started in another and more successful direction, my object is gained.

FINIS.

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